

Notice of Allowability

Application No.

09/844,345

Examiner

Insun Kang

Applicant(s)

ROBISON, ARCH D.

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/19/2006.
2. ☒ The allowed claim(s) is/are 1-42.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Thinh Nguyen (Reg. 42,034) on 8/17-18/2006.

The application has been amended as follows:

Claim 1 (Canceled).

Claim 2. (Currently amended) A method comprising:

pruning local graphs representing local problems, the local problems corresponding to separately compilable components in a software program, each of the local graphs having edges and vertices, each edge having a transfer function, each vertex having a value, values of each of the local graph forming a lattice under a partial ordering ~~The method of claim 1~~ wherein pruning the local graphs comprising: associating a use attribute to each one of the vertices in each of the local graphs, the use attribute being asserted for each vertex reachable from a named vertex; associating an affect attribute to each one of the vertices in each of the local graphs, the affect attribute is asserted for a vertex if a named vertex is reachable from the former vertex; and pre-solving a subgraph of each of the local graphs, the subgraph including subgraph edges, each of the subgraph edges connecting a tail vertex to a head vertex, the tail vertex having a negated use attribute.

Claim 15 (Canceled).

Claim 16. (Currently amended) A computer program product comprising: a machine useable medium having computer program code embedded therein, the computer program product having: computer readable. program code to prune local graphs representing local problems, the local problems corresponding to separately compilable components in a software program, each of the local graphs having edges and vertices, each edge having a transfer function, each vertex having a value, values of each of the local graph forming a lattice under a partial ordering

~~The computer program product of claim 15~~ wherein the computer readable program code to prune the local graphs comprising: computer readable program code to associate a use attribute to each one of the vertices in each of the local graphs, the use attribute being asserted if there is an edge connecting a named vertex to the each one of the vertices; computer readable program code to associate an affect attribute to each one of the vertices in each of the local graphs, the affect attribute is asserted if there is an edge connecting the each one of the vertices to a named vertex; and computer readable program code to pre-solve a subgraph of each of the local graphs, the subgraph including subgraph edges, each of the subgraph edges connecting a tail vertex to a head vertex, the tail vertex having a negated use attribute.

Claim 29 (Canceled).

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Claim 30. (Currently amended) A system comprising: a processor; and a memory coupled to the processor to store instruction code, the instruction code, when executed by the processor, causing the processor to: prune local graphs representing local problems, the local problems corresponding to separately compilable components in a software program, each of the local graphs having edges and vertices, each edge having a transfer function, each vertex having a value, values of each of the local graph forming a lattice under a partial ordering

~~The system of claim 29~~ wherein the instruction code causing the processor to prune the local graphs causes the processor to: associate a use attribute to each one of the vertices in each of the local graphs, the use attribute being asserted if there is an edge connecting a named vertex to the each one of the vertices; associate an affect attribute to each one of the vertices in each of the local graphs, the affect attribute is asserted if there is an edge connecting the each one of the vertices to a named vertex; and pre-solve a subgraph of each of the local graphs, the subgraph including subgraph edges, each of the subgraph edges connecting a tail vertex to a head vertex, the tail vertex having a negated use attribute.

These amendments were necessary in order to further clarify the claims.

Examiner's Statement of Reason(s) for Allowance

2. Claims 1-42 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The closest prior art of record, i.e. Binkley, taken alone or in combination, fails to teach or fairly suggest at least: pruning...pre-solving a subgraph of each of the local graphs, the subgraph including subgraph edges, each of the subgraph edges connecting a tail vertex to a head vertex, the tail vertex having a negated use attribute as recited in the independent claims 1, 15, and 29; determining parts of the local graph...selecting a vertex having asserted use and affect attributes and a lattice value; and sending the selected edge and vertex to an inter-procedural analyzer as recited in claim 39.

While Binkley discloses optimization of interprocedural constant propagation using dependence graphs and a data-flow model, ultimately, Binkley does not disclose associating a use attribute ... an affect attribute to each one of the vertices in each of the local graphs ...and pre-solving a subgraph of each of the local graphs, the subgraph including subgraph edges, each of the subgraph edges connecting a tail vertex to a head vertex, the tail vertex having a negated use attribute as recited in claims 1, 15, and 29; determining parts of the local graph...selecting a vertex having asserted use and affect attributes and a lattice value; and sending the selected edge and vertex to an inter-procedural analyzer as recited in claim 39. See also Applicant's remark filed 5/19/2006.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

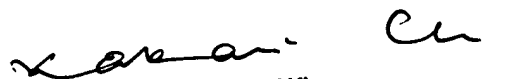
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 571-272-3724.

The examiner can normally be reached on M-F 7:30-4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on 571-272-3719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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